



## SEQUENCE LISTING

<1> ~~Patent~~ niell, Henry

<120> Pharmaceutical Proteins, Human Therapeutics, Human Serum Albumin  
Insulin, Native Cholera Toxic B Submitted on Transgenic Plastids

<130> CHL-T104XC1

<140> US 09/807,742

<141> 2001-04-18

<150> PCT/US01/06288

<151> 2001-02-28

<160> 26

<170> PatentIn version 3.2

<210> 1

<211> 1250

<212> PRT

<213> Artificial sequence

<220>

<223> Protein-based polymer (PBP) made from synthetic genes.

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35 40 45

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val  
50 55 60

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro  
65 70 75 80

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly  
85 90 95

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val  
100 105 110

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly  
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Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val  
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Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro  
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Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val  
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Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val  
 210 215 220

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro  
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Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val  
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 965 970 975

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Val	Pro	Gly	Val	Gly	Val	Pro	Gly	Val	Gly	Val	Pro	Gly	Val	Gly
1025						1030					1035			
Val	Pro	Gly	Val	Gly	Val	Pro	Gly	Val	Gly	Val	Pro	Gly	Val	Gly
1040						1045					1050			
Val	Pro	Gly	Val	Gly	Val	Pro	Gly	Val	Gly	Val	Pro	Gly	Val	Gly
1055						1060					1065			
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1085						1090					1095			
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1100						1105					1110			
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1115						1120					1125			
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1130						1135					1140			
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1145						1150					1155			
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1160						1165					1170			
Val	Pro	Gly	Val	Gly	Val	Pro	Gly	Val	Gly	Val	Pro	Gly	Val	Gly
1175						1180					1185			
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1190						1195					1200			
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1205						1210					1215			

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<212> PRT  
<213> Artificial Sequence

<220>  
<223> Illustrative endoplasmic reticulum retention signal

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<210> 3  
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<213> Artificial sequence

<220>  
<223> Illustrative peptide

<400> 3

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<211> 25  
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<223> Primer

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<223> Primer

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<223> Illustrative peptide (cleavage site recognized for TEV protease)



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<223> Cleavage site recognized by Thrombin

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<223> 6-His tag

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<210> 13

<211> 25

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<213> Artificial Sequence

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<223> PCR primer 3P

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<212> DNA

<213> Artificial Sequence

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<223> PCR primer 3M

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 <212> PRT  
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Val Pro Gly Val Gly Ile Val Pro Gly Val Gly Ile Val Pro Gly Val  
 35 40 45

Gly Ile Val Pro Gly Val Gly Ile Val Pro Gly Val Gly Ile Val Pro  
 50 55 60

Gly Val Gly Ile Val Pro Gly Val Gly Ile Val Pro Gly Val Gly Ile  
 65 70 75 80

Val Pro Gly Val Gly Ile Val Pro Gly Val Gly Ile Val Pro Gly Val  
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Gly Ile Val Pro Gly Val Gly Ile Val Pro Gly Val Gly Ile Val Pro  
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Gly Val Gly Ile Pro Gly Val  
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 <212> DNA  
 <213> Homo sapiens

<400> 16

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 cagggtggagc tgggcggggg ccctggtgca ggcagcctgc agcccttggc cctggagggg 180  
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 <211> 260  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Chloroplast modified proinsulin sequence

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 caagtagaat taggtgggtg tcttgggtgct ggttctttac aaccttttagc tttagaaggt 180  
 tctttacaaa aacgtgggtat tgtagaacaa tgttgtactt ctatttggtc tttataccaa 240  
 ttagaaaaact actgtaacta 260

<210> 18  
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 <212> DNA  
 <213> Homo sapiens

<400> 18  
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 acaggcatcg tggatgagtg ctgcttccgg agctgtgatc taaggaggct ggagatgtat 180  
 tgcgcacccc tcaagcctgc caagtcagct 210

<210> 19  
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 <212> DNA  
 <213> Homo sapiens

<400> 19  
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 actgggtattg tagatgaatg ttgtttccgt tcttgtgatt tacgtcgttt agaaatgtac 180  
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<223> Protein-based polymer (PBP) made from synthetic genes

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<210> 21

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Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly  
35 40 45

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val  
50 55 60

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro  
65 70 75 80

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly  
85 90 95

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val  
100 105 110

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly  
115 120 125

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val  
130 135 140

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro  
145 150 155 160

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly  
 165 170 175

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val  
 180 185 190

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly  
 195 200 205

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val  
 210 215 220

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro  
 225 230 235 240

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly  
 245 250 255

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val  
 260 265 270

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly  
 275 280 285

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val  
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Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly  
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Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val  
 370 375 380

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro  
385 390 395 400

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly  
405 410 415

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val  
420 425 430

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly  
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Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val  
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Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro  
465 470 475 480

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly  
485 490 495

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val  
500 505 510

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly  
515 520 525

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val  
530 535 540

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro  
545 550 555 560

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly  
565 570 575

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val  
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<210> 22  
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 <212> PRT  
 <213> Artificial Sequence

<220>

<223> Protein-based polymer (PBP) made from synthetic genes.

<400> 22

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Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly  
 35 40 45

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val  
 50 55 60

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro  
 65 70 75 80

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly  
 85 90 95

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val  
 100 105 110

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly  
 115 120 125

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val  
 130 135 140

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro  
 145 150 155 160

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly  
 165 170 175

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val  
 180 185 190

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly  
 195 200 205

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val  
 210 215 220

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro  
 225 230 235 240

Gly Val Gly Val Pro Gly Val Gly Val Pro  
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<210> 23  
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 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> RBS sequence

<400> 23

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<210> 24  
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 <212> PRT  
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 20 25 30

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly  
 35 40 45

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val  
 50 55 60



Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro  
65 70 75 80

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly  
85 90 95

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val  
100 105 110

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly  
115 120 125

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val  
130 135 140

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro  
145 150 155 160

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly  
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Gly Val Pro Gly Val Gly Val Pro  
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Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly  
35 40 45

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val  
50 55 60

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro  
65 70 75 80

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly  
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Val Gly Val Pro  
100

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<212> PRT  
<213> Artificial Sequence

<220>  
<223> Chloroplast preferred Ribosome Binding Site (RBS) Shine-Dalgarno  
sequence

<400> 26

Gly Gly Ala Gly Gly  
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